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June 5, 1996

William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W.
Mail Stop Code 1170
Washington, D.C. 20544

Re: Ex Parte Presentation in Re Revision of Part 22 of the Commission's Rules Governing the Public Mobile Services, CC Docket No. 92-115

Dear Mr. Caton:

Pursuant to the requirements of Sections 1.1200 et seq. of the Commission's Rules, you are hereby notified that Carol L. Bjelland, Director of Regulatory Matters for GTE Service Corporation, David A. Gross, Washington Counsel for AirTouch Communications, Sara F. Seidman, counsel for AT&T Wireless Services, Inc., and the undersigned met today with William E. Kennard, Victoria Phillips, and Peter A. Tenhula of the Office of General Counsel. During the course of the meeting, the representatives of the companies listed above reiterated the view, expressed in those companies' comments and reply comments in the above-referenced docket, that Rule 22.919 is an important tool in preventing cellular fraud. Also enclosed are copies of three documents handed out at the meeting, two of which have been previously filed in this docket.

Should there be any questions regarding this matter, please contact me.

Sincerely,

Douglas I. Brandon

cc (w/o enclosures):

William E. Kennard, Esq.
Victoria Phillips, Esq.
Peter A. Tenhula, Esq.
Ms. Carol L. Bjelland
David A. Gross, Esq.
Sara F. Seidman, Esq.

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AUTHENTICATION

DESCRIPTION FOR GENERAL PUBLIC OR MEDIA

Authentication is the new method developed by the cellular industry to thwart the criminals who are presently cloning valid customer accounts for illegal purposes.

To implement Authentication, the latest generation of analog and digital phones have a built-in security feature. This feature contains secret code numbers and a cryptographic process which occurs in order to verify that the phone placing and receiving calls is the actual customer's phone, and not the cloned phone. Authentication is a question and answer dialog between the mobile phone and the carrier that utilizes secret code numbers, stored in the phone and in a secure database with the cellular carrier, to confirm the phone's identity.

Each time a person either places or receives a call, the phone is asked to prove its identity. To do this, the phone uses the secret code stored within it, as well as a second code which changes on a per-call basis and is sent by the carrier (to the phone) as part of the question. During this dialog, the codes are used independently by both the phone and the cellular carrier to calculate an answer. The phone sends its calculated answer back to the cellular carrier where it is compared to the answer independently calculated by the carrier. If both answers are the same, the call is allowed to go through. The entire authentication process is performed without delaying the amount of time it takes to connect a call.

Additionally, the secret codes stored in the phone and the database are never sent over the air. This fact, combined with the fact that the valid answers change on a per-call basis, make it virtually impossible for criminals to steal over-the-air messages to commit fraud on the cellular system.

Customer benefits of Authentication are:

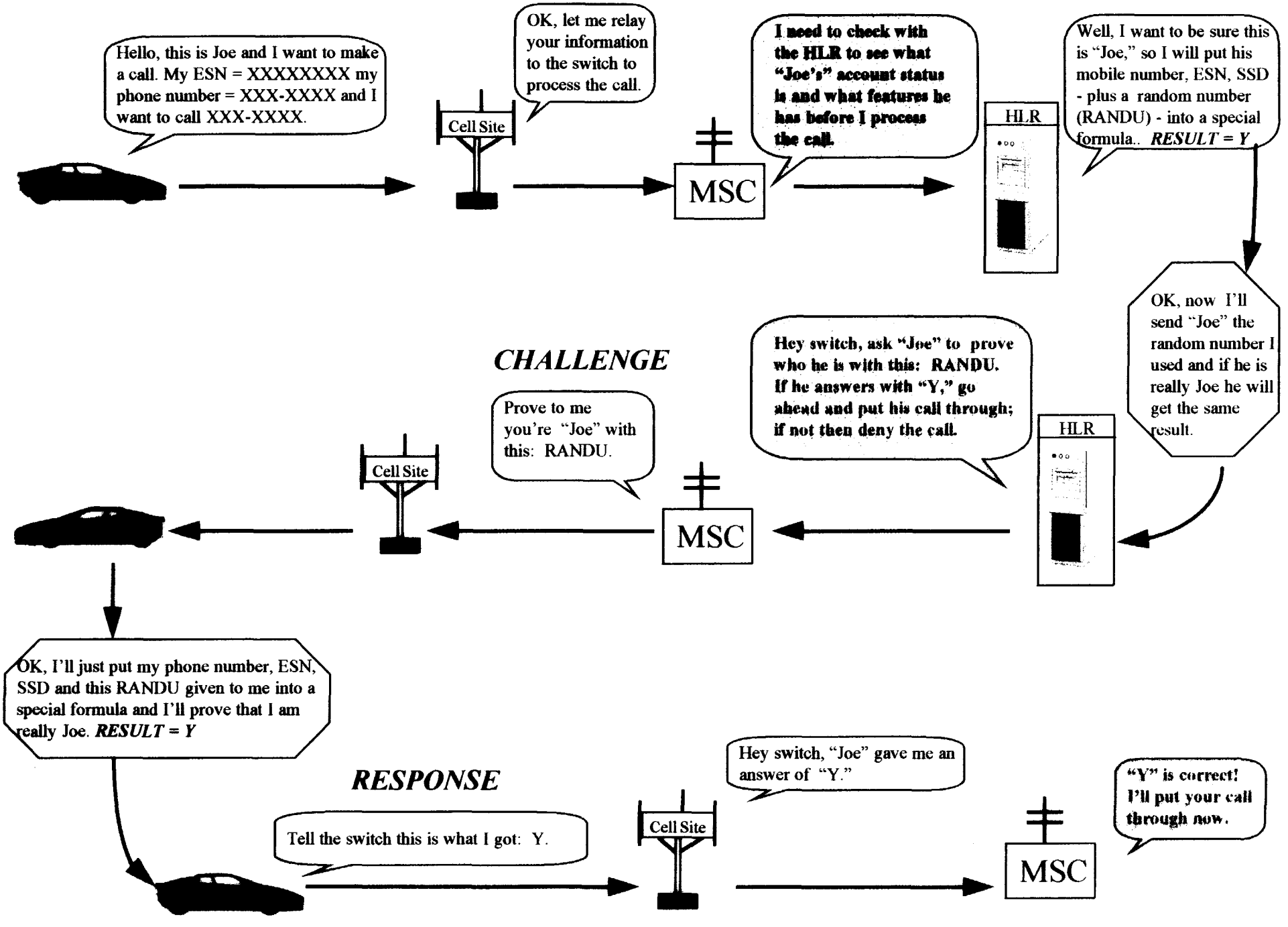
1) Customers do not need to know the secret code to make phone calls (Authentication is transparent to the customer).

2) Exposure to fraud is greatly reduced.

3) In the event of cloning, the code can be readily changed in the phone in a matter of seconds. The customer does not need to get a new phone number or phone.

ANALOGY:

Authentication might best be compared to a locked door which must be opened in order for two people to talk to one another. The door has two locks. One lock is on each side of the door and each lock requires matching identical keys to open it. Additionally, both keys must be used at the same time. If both matching keys are used by both people on each side of the door at the same time, then the locks will allow the door to open and the two people can talk!



5/16/96

GTE

RECEIPT

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Carol L. Bjelland
Director
Regulatory Matters

(202) 463-5292

May 15, 1996

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N. W.
Washington, D. C. 20554

RE: EX PARTE: CC Docket No. 92-115

Dear Mr. Caton:

This letter shall serve as written notification that, on this day, Bob Sclafani and Alan Wolfe, representing GTE Mobilnet and the undersigned, on behalf of GTE Service Corporation, met with Dr. Tom Stanley of the Commission's Wireless Telecommunications Bureau to discuss issues concerning the above-referenced proceeding. Specifically, GTE addressed issues previously raised by other parties concerning Section 22.919 of the Commission's rules. The attached materials were used to faciliate this discussion.

Please include this notification, and the attached discussion materials, in the record of this proceeding in accordance with the Commission's rules concerning ex parte communications.

Sincerely,

Carol L. Bjelland

Attachments

CC: T. Stanley

SECTION 22.919

CELLULAR NETWORKS HAVE BEEN DESIGNED TO OPERATE BASED ON UNIQUE ESN-MIN COMBINATION

CELLULAR ESN IS SIMILAR TO VEHICLE IDENTIFICATION NUMBER

UNIQUE ESN-MIN COMBINATION IDENTIFIES CELLULAR SUBSCRIBERS AND EQUIPMENT FOR TRACKING HOME USERS AND ROAMERS

EMULATED ESN's COMPROMISE CELLULAR NETWORK MOBILITY MANAGEMENT AND EFFICIENT CELLULAR NETWORK OPERATIONS

EMULATED ESN's AFFECT WIRELESS E911 LOCATION PROPOSALS UNDER CONSIDERATION IN WT DOCKET 94-102

EMERGENCY SERVICE OPERATORS MAY MISTAKENLY IDENTIFY E911 CALLER LOCATION IN CASES WHERE THE EMULATED ESN AND NON-EMULATED ESN PHONES ARE "ON" SIMULTANEOUSLY

USE OF EMULATED ESN's COMPROMISES EXISTING CELLULAR SERVICE PROVIDER AUTOMATIC FRAUD DETECTION SYSTEMS

EMULATED ESN's ARE INDISTINGUISHABLE IN CELLULAR NETWORK

PROLIFERATION OF EMULATED ESN's DETRIMENTALLY AFFECTS THE MAGNITUDE OF THE FRAUD PROBLEM CELLULAR SERVICE PROVIDERS MUST MANAGE

EMULATED ESN's ARE INCOMPATIBLE WITH NEW FRAUD DETECTION AND PREVENTION MEASURES SUCH AS "RF FINGERPRINTING" AND AUTHENTICATION THAT OPERATE BASED ON UNIQUE ESN-MIN COMBINATIONS

GTE CURRENTLY OFFERS CELLULAR PHONE EXTENSION SERVICE

UTILIZE SEPARATE AND DISTINCT ESN-MIN COMBINATIONS

NOT DISRUPTIVE TO EFFICIENT NETWORK OPERATIONS OR MOBILITY MANAGEMENT

GENERAL OVERVIEW

EXTENSION SERVICE PLUS - ONE PLAN - TWO PHONES ONE NUMBER

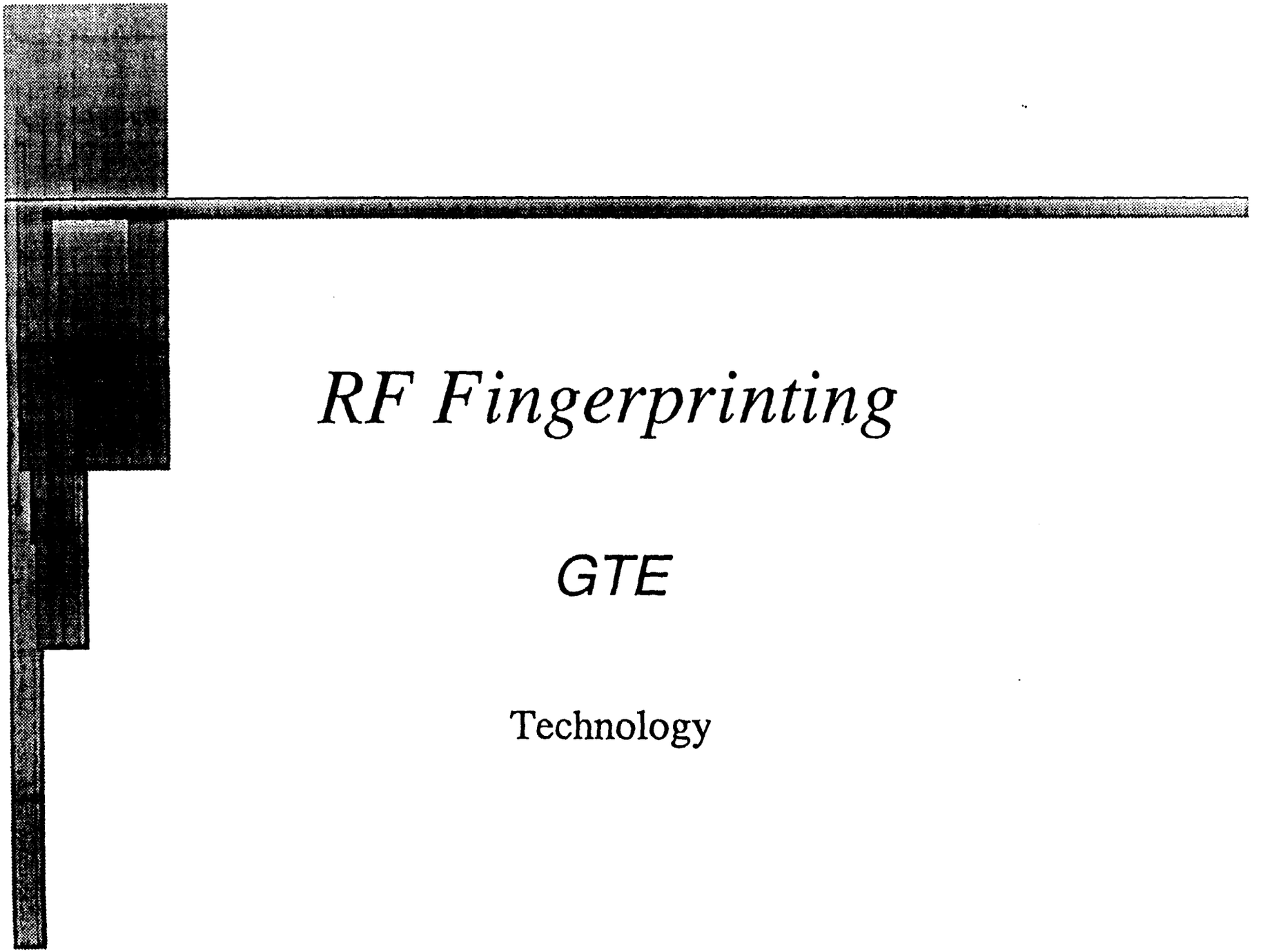
Extension Service Plus (ESP)	One Plan	Two Phones One Number (TFON)
Product Overview		
• Sequential Ringing Product • Customer selects one phone to be the primary and a different phone to be the secondary • Incoming calls placed to the primary phones number will be forwarded to the secondary phones, if the primary phone is unanswered or busy • Bundles minutes and access charges in one bill • Each phone has a unique Mobile Directory Number and Electronic Serial Number (ESN) • Both phones can be used simultaneously	• Uses the AT&T switch feature - Multiple Units Same Directory Number (MUSDN) • Assigns the same Mobile Directory Number to two phones • Each phone retains a unique Electronic Serial Number (ESN) • Only one phone can be on at any one time • Designed for someone with a car phone and a handheld	• Simultaneously rings two phones • Each phone has a unique Mobile Directory Number and Electronic Serial Number (ESN) • Both phones can be used simultaneously • Bundles minutes and access charges in one bill
Operations		
• Primary phone always rings first, then if no answer or busy switch transfers call to secondary phone • Busy/No Answer Transfer is permanently set at the switch, forwarding calls to the secondary phone	• Mobile Switch will ring whichever phone is on • One phone is primary the other is secondary	• Both phones ring at once • Incoming call it sent to Adjunct Service Platform (ASP), ASP Rings both phones at the same time, first to answer the call gets the call • No primary or secondary phones
Functionality		
• Roam with either phone to make outgoing calls • ESP will not work for incoming calls in a non-Automatic Call Delivery (ACD) market unless secondary phone is roaming and primary is in home area. • Both phones can be on at same time • Can make simultaneous calls on both phones • Can call from one phone to the other • Bill detail by phone • Both phones share 1 voice mail and features	• Can not use both phones at once, one phone must be off • Can not call from one phone to the other • Bill detail groups both phones together • Both phones share 1 voice mail • Ability to roam with secondary phone is limited to selected markets	• Roam with either phone. No problem in either ACD or non-ACD markets • Both phones can be on at same time; each phone works independently of the other • Requires new third phone number Can use new third number as new incoming number, or keep existing cellular number as the incoming number and use the new number on one of the phones • Can make simultaneous calls on both phones • Can call from one phone to the other • Bill detail by phone • Can either share voice mail or each phone have their own Features are shared between the lines

Extension Service Plus

- *Each phone has unique MIN/ESN*
- *Calling Party given MIN of primary phone*
- *Primary phone is given Call Forward - No Answer / Busy to secondary phone*
- *Both phones can roam*
- *Phones can call each other*

One Plan

- *Each phone has unique ESN - same MIN*
- *Only one phone on at a time*
- *Only one phone can roam at a time*
- *When valid phone is roaming call will be delivered to roam system*
- *Phones cannot call each other*



RF Fingerprinting

GTE

Technology

Two Phones One Number

- *Each phone has unique MIN/ESN*
- *Calling Party given third pilot number*
- *Calls to pilot number ring both phones simultaneously*
- *First phone to answer call gets connected*
- *Both phones can roam*
- *Phones can call each other*

Three Extension Phone Service Offerings

- *Extension Service Plus*
- *One Plan*
- *Two Phones One Number*

Technical Overview

- *How RF Fingerprinting works*
- *Critical Assumption*

Four Step Process

- *Detect*
- *Fingerprint*
- *Compare*
- *Decide*

Detect

- *Specialized Receivers deployed in area of interest*
- *Monitors Reverse Control Channel*

Fingerprint

- *System learns RF Fingerprint of phone (MIN/ESN)*
- *Fingerprint stored for comparison*

Compare

- *Specialized Receiver listens for call originations / terminations*
- *Specialized Receiver fingerprints phone (MIN/ESN)*
- *Compares with stored fingerprint*

Decide

- *If fingerprints match call goes through*
- *If fingerprints do not match call is terminated*

Summary

- *System determines fingerprint of phone (MIN/ESN)*
- *Multiple phones with same (MIN/ESN) will reduce effectiveness of the system*

Cellular Authentication

GTE

Technology

Participants

- *Mobile Station (MS)*
- *Authentication Center (AC)*
- *Home Location Register (HLR)*
- *Visitor Location Register (VLR)*

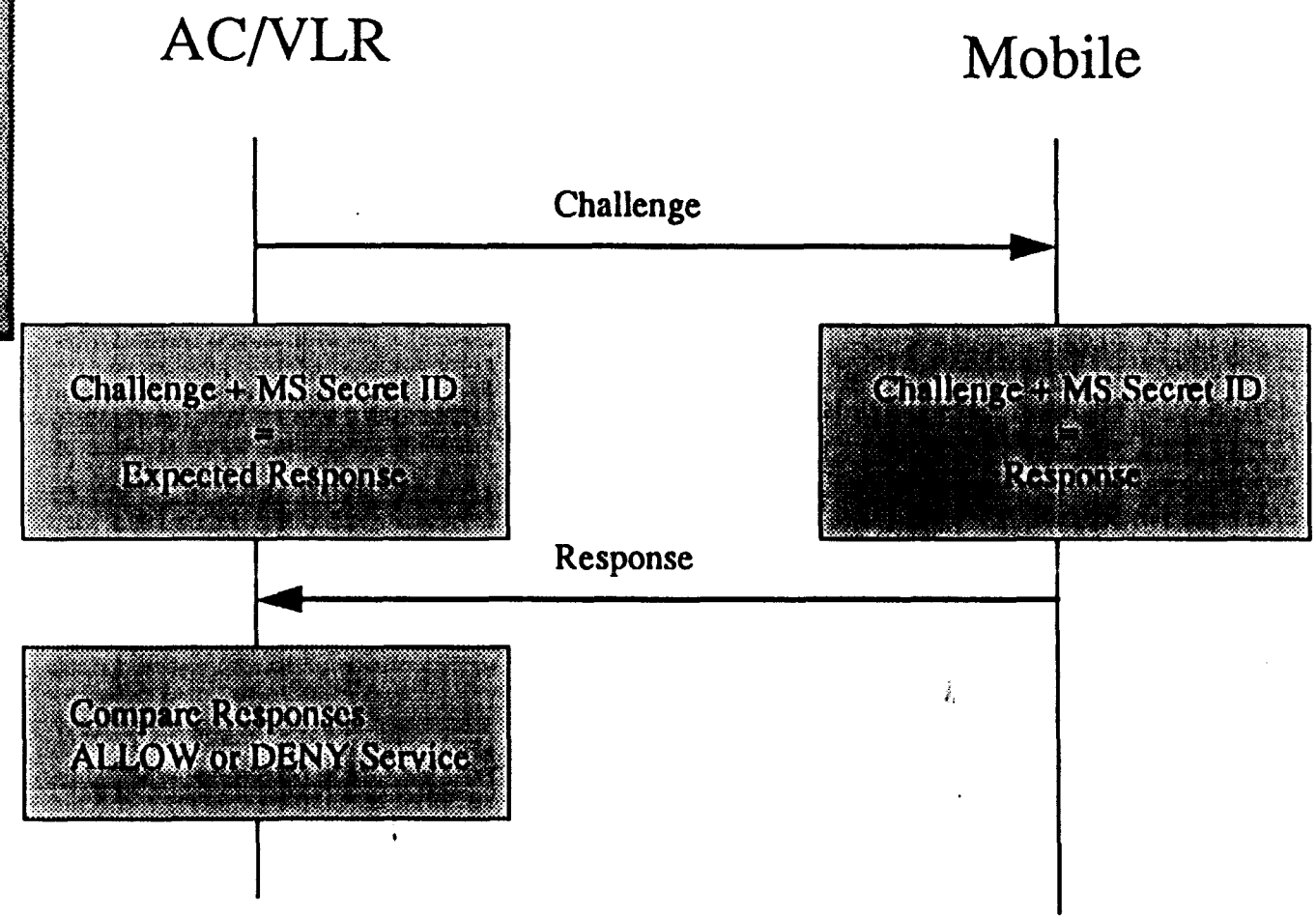
Participants (contd)

- *Home subscribers authenticated by the AC*
- *All communication with the AC is via the HLR*
- *Roamers are authenticated by:*
  - *AC, if SSD is NOT shared*
  - *VLR, if SSD is shared*

Authentication Center (AC)

- *A new TR45 Network Element*
- *Can either be a stand-alone unit, or integrated with the HLR*
- *Responsible for authenticating mobiles, and thereby ALLOW or DENY service*
- *AC functionality is built into the VLRs as well.*

Basic Concept



Technical Overview - CAVE

- *Cellular Authentication and Voice Encryption algorithm*
- *Used to calculate:*
  - *Shared Secret Data (SSD)*
  - *Global Challenge Response (AUTHR)*
  - *Unique Challenge Response (AUTHU)*

Technical Overview - CAVE Key Variables

- ***A-Key*** *(20 digits + 6 digit checksum) is known ONLY to the MS and AC, NOT a PIN*
- *RANDSSD is a periodically changed random number by the AC*
- ***SSD*** *= f(A-Key, ESN, MIN1, RANDSSD)*
- ***"COUNT"*** *validation - not implemented by Lucent*